

SOME HETEROSPHYRONID PSEUDOSCORPIONS FROM NEW MEXICO

C. CLAYTON HOFF⁽¹⁾

The occasion of the present paper is to record for the first time the presence of heterosphyronid pseudoscorpions from New Mexico. The material serving as the basis for this report has been collected during the past three years by the author and his students.

The state of New Mexico is not a geographical area particularly favorable to pseudoscorpions. At lower elevations semiarid grasslands are common, at middle elevations the typical vegetation consists of somewhat open stands of conifers adapted to relatively dry situations, and in higher elevations the more moist climax vegetation is restricted chiefly to a closed stand of spruce and fir. Within the areas covered by climax vegetation and on the whole not especially suited to pseudoscorpions, there are many niches in which environmental conditions are more favorable. For instance, pseudoscorpions are common in the underground nests of rodents and in deciduous tree litter, especially the litter of aspen and oaks at moderate elevations. Some species also live under the started bark and in the decayed wood of coniferous logs and stumps, especially when these occur within or are adjacent to open areas. Although some species occur in the coniferous litter, especially litter of pinyons and junipers, presence here is not nearly so common as in the litter of the deciduous forests of eastern United States.

The occurrence of isolated and somewhat restricted suitable habitat niches is an apparent factor in creating the general impression that pseudoscorpions are very rare in New Mexico. In all probability the number of species in the state compares favorably with the number in other states of equal latitude, but the population density, even in the more favorable niches, is not great. As a result, adequate collections are not easily secured.

With respect to the heterosphyronid pseudoscorpions in particular, none have been found in rodent nests in New Mexico. Indeed this group is rare in rodent nests everywhere, in contrast to the abundance of monosphyronid pseudoscorpions found in such a habitat. The heterosphyronid pseudoscorpions of the state are found chiefly in deciduous tree litter and in well-rotted coniferous logs, although some individuals may be found in the litter beneath coniferous trees. In general, the heterosphyronid pseudoscorpions of

(1) The University of New Mexico, Albuquerque, New Mexico. This investigation was aided by a faculty research grant from the University of New Mexico.

New Mexico are more frequent in disturbed areas, both disclimax and subclimax, than elsewhere.

At present three species of Heterosphyronida, all of the family Chthoniidae *sensu stricto*, are known to occur in New Mexico. These are discussed in the present paper. The three species have been associated taxonomically with species already described in the literature, but specific assignment must be made with some reservation because of the inadequacy of available species descriptions. Some specific diagnoses are especially wanting because certain species have been described from one or a few individuals without regard to possible limits of variation. Variations of an intraspecific nature are conspicuous in the present material, these variations probably resulting from environmental factors that may play an important part in determination of such characters as absolute size. Since one does not know the exact limits or the causes of these variations, it seems proper at this time to neglect all possibilities of subspecific rankings.

The collections of heterosphyronid pseudoscorpions reported here serve to extend radically the geographical ranges of the included species. Marked extensions of the geographical ranges of many of our North American pseudoscorpions may be expected since there has been virtually no concentrated research on the pseudoscorpion fauna of the basin and range country of the Southwest.

MUNDOCHTHONIUS MONTANUS Chamberlin

Figures 1 - 4

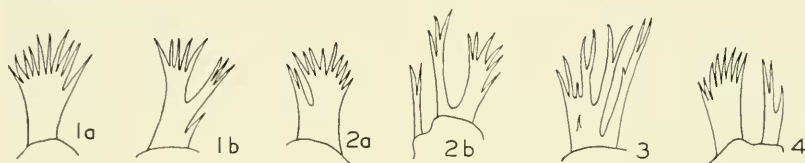
Mundochthonius montanus CHAMBERLIN, 1929, Ann. Mag. Nat. Hist., ser. 10, vol. 4, p. 65.

RECORDS: Nine collections, including nine males, 14 females, and 14 nymphs, from Tejano Canyon on the east slope of the Sandia Mountains, Bernalillo Co., New Mexico. The elevation is 8300 feet. The collections were made in November and December of 1949 and in December, 1950.

The collections come from a biotically diverse area in which both climax and subclimax communities occur in a somewhat confused pattern. The south-facing slope of the canyon is covered chiefly by a dense stand of small Gambel oaks and the north-facing slope by fir trees. Among the latter are interspersed small groups of subclimax aspen. The south-facing slope is much warmer and drier than the north-facing one. Three of the nine collections were made from oak litter and soil; four collections were from the soil and litter beneath aspens; one collection was from fir litter and soil near

the edge of an aspen grove; and one collection was from a well-decayed coniferous log in the fir-forested area. It is curious to note that although collections have been made from various areas and communities in other parts of the Sandia Mountains, this species has been found only in Tejano Canyon.

REMARKS: There would appear to be no uncertainty regarding the species determinations of these specimens, although, in the absence of an adequate modern description, one must exercise some caution. There is as complete agreement as can be expected with the original description given by Chamberlin (1929) for *M. montanus*, a species described from a single female specimen taken from surface soil at an elevation of 8500 feet at Manitou, Colorado. The



COXAL SPINES OF *MUNDOCHTHONIUS MONTANUS*
FROM NEW MEXICO

Fig. 1—Spines of right coxa II (a) and left coxa II (b), specimen S-1506.2, female. Fig. 2—Spines of right coxa II (a) and left coxa II (b), specimen S-1435.1, male. Fig. 3—Spines of left coxa II, specimen S-1502.1, female. Fig. 4—Spines of left coxa II, specimen S-1434.1, female.

agreement in tergal chaetotaxy is particularly significant. The agreement of our specimens with the type specimen in regard to the length/width ratios of palpal femur and chela is not especially close, but one must consider that the single type specimen was treated with potassium hydroxide solution before examination. Such treatment commonly distorts the length/width ratios of palpal and pedal podomeres. On examination of some of our specimens, it is apparent that the nature of the spines of coxa II is much different from the spines of *M. montanus* pictured by Chamberlin (1931, fig. 21-I). In other individuals, however, the coxal spines approximate the spines pictured by Chamberlin. The extent of variation in the coxal spines of our specimens from the Sandia Mountains is shown in the figures.

In order to establish more fully this species in the literature, important measurements are given here for the specimens from New Mexico. Previous descriptions have not included the sizes of body and appendages. Based on seven females, the various parts

measured show the following ranges: body length 0.95-1.25 mm.; length of carapace 0.34-0.37 mm.; palpal femur 0.272-0.319 mm. long, 0.078-0.088 mm. wide, length 3.3 to 3.75 times the width; palpal tibia 0.164-0.186 mm. long, 0.096-0.105 mm. wide, length 1.65 to 1.84 times the width; chela 0.45-0.50 mm. long, 0.113-0.127 mm. wide, length 3.85 to 4.07 times the width; chela 0.113-0.124 mm. deep, length of chelal hand 0.160-0.191 mm.; length of the movable finger 0.295-0.326 mm. For the male, the following ranges have been secured from five specimens: body length 0.92-1.18 mm.; length of carapace 0.32-0.40 mm.; palpal femur 0.276-0.292 mm. long, 0.074-0.084 mm. wide, length 3.5 to 3.74 times the width; tibia 0.155-0.165 mm. long, 0.086-0.097 mm. wide, length 1.7 to 1.8 times the width; chela 0.445-0.475 mm. long, 0.103-0.118 mm. wide, length 4.03 to 4.37 times the width; chelal hand 0.103-0.117 mm. deep; hand length 0.167-0.177 mm. long; movable finger 0.280-0.308 mm. in length.

The species has been reported previously only from the type locality, Manitou, Colorado.

APOCHTHONIUS MOESTUS (Banks)

Chthonius moestus BANKS, 1891, *Canad. Ent.*, vol. 23, p. 165.

Apochthonius moestus CHAMBERLIN, 1929, *Ann. Mag. Nat. Hist.*, ser. 10, vol. 4, p. 67.

RECORDS: Specimens of this species have been found in three collections from New Mexico. One female occurs in a collection from oak soil and litter in Tejano Canyon, 8300 feet elevation, Sandia Mountains, Bernalillo Co., New Mexico, on Dec. 10, 1949; one female was found in a collection of oak litter and soil from the area near Cole Springs, elevation about 7400 feet, Sandia Mountains, Bernalillo Co., New Mexico, on July 21, 1951; and two males and one female have been taken from a sample of pinyon litter at an elevation between 6500 and 7000 feet at the south edge of Mt. Taylor, near Grants, Valencia Co., New Mexico, on Oct. 20, 1951.

REMARKS: A comparison of present specimens with specimens from the Mississippi River Valley and from North Carolina indicates a close morphological agreement among specimens from all three areas. No significant difference in the chaetotaxy and in the apodemes of the male genitalia have been discovered. The length/width ratios of palpal podomeres of New Mexico specimens fall within the ranges given for specimens from North Carolina (Hoff, 1945) and Illinois (Hoff, 1946), but close measurements of the available specimens indicate that the palpal podomeres may be

slightly larger on the average for specimens from North Carolina and Illinois. Until adequate collections from New Mexico allow statistical expressions of the variations in length of palpal femur and chela, it will be impossible to demonstrate a valid difference in size. If a significant size difference does occur, the smaller size of specimens from New Mexico may be a function of the habitat, since certainly food is much more restricted and the climatic and edaphic factors, especially soil and litter moisture, are much less favorable for specimens from New Mexico.

In order to more fully establish the present species in the literature, it seems advisable to give here the ranges for five specimens, including two males and three females, from New Mexico. While sexual dimorphism occurs in this species, the differences in measurements of palpal podomeres of the two sexes is so small that, in view of our present limited material, measurements of the structures of the two sexes are combined. Body length 1.18-1.35 mm.; length of carapace 0.34-0.40 mm.; palpal femur 0.338-0.350 mm. long, 0.076-0.085 mm wide, length 4.12 to 4.6 times the width; tibia 0.171-0.178 mm. long, 0.089-0.105 mm. wide, length 1.66 to 1.82 times the width; chela with length 0.51-0.55 mm., width 0.109-0.128 mm., length 4.3 to 4.8 times the width; chelal hand 0.110-0.131 mm. deep, 0.173-0.190 mm. long; movable finger 0.35-0.37 mm. in length.

The present records serve to extend the geographical range of this species far west of the previously known range. In general *Apochthonius moestus* is common in the deciduous forests east of the Mississippi River, with a few records in the tier of states just west of the River (Chamberlin, 1929; Hoff, 1949). When the pseudoscorpions of the plains area have been investigated, a continuity of range may be found between areas occupied by this species in New Mexico and the general area of the Mississippi River Valley.

LECHYTIA PACIFICA (Banks)

Roncus pacificus BANKS, 1893, *Canad. Ent.*, vol. 25, p. 66.

Lechytia pacifica BANKS, 1895, Jr. *New York Ent. Soc.*, vol. 3, p. 13.

RECORDS: This species has been found in four collections from New Mexico. A male and three nymphs were taken from a pile of acorn hulls in the cavity of a yellow pine stump near Cole Springs, elevation about 7400 feet, Sandia Mountains, Bernalillo Co., New Mexico, on July 21, 1951; one female and five nymphs were found in pinyon litter at an elevation of about 6500 feet at the south base of Mt. Taylor, near Grants, Valencia Co., New Mexico, Oct. 20, 1951; four males and three nymphs were secured from a well-rotted yellow

pine log at an elevation of about 7500 feet in the foothill area of Gallinas Peak, Lincoln Co., New Mexico, on July 1, 1951; and four males, one female, and four nymphs were taken from a well-rotted yellow pine log near the junction of State Routes 4 and 126, north of Jemez Springs at an elevation of about 7600 feet, Jemez Mountains, Sandoval Co., New Mexico, on July 23, 1950. This species seems to be definitely associated with coniferous debris at elevations between 6500 and 7500 feet.

REMARKS: Our specimens agree with the very inadequate original description of the species and with the figures of the palpus given by Chamberlin (1931, fig. 28-C). Unfortunately exact measurements of palpal podomeres are not available in the literature. Neither is there a record of the length/width ratios of the palpal podomeres although an indication of these ratios may be secured from the figure previously mentioned. From measurements of the palpal femur, tibia, and chela shown in Chamberlin's figure, it is obvious that in our New Mexican species the femur and chela are a little more slender, but one must keep in mind that length/width ratios based on measurements of a figure may not be especially accurate. A comparison of the measurements of the present females with measurements of a single female from Utah (Hoff and Clawson, 1952) indicates that the New Mexico specimens are slightly larger. In the light of possible intraspecific variation, the differences are probably of no significance and, since full agreement occurs in the length/width ratios of palpal podmeres of the New Mexico and Utah specimens, the individuals from the two areas are considered to be conspecific.

Measurements have been secured from two females and four males from the New Mexico collections. In view of the few specimens available and the slight differences manifest among specimens of the two sexes, it appears feasible to express measurements as the ranges of all six individuals. Body length 1.25-1.55 mm., length of carapace 0.35-0.40 mm.; palpal femur 0.366-0.397 mm. long, 0.095-0.109 mm. wide, length/width ratio 3.65 to 4.03; palpal tibia 0.21-0.232 mm. long, width 0.113-0.128 mm., length 1.75 to 1.92 times the width; chela 0.57-0.615 mm. long, 0.140-0.168 mm. wide, length 3.65 to 4.15 times the width; chelal hand 0.144-0.171 mm. deep, 0.264-0.303 mm. long; movable chelal finger 0.325-0.343 mm. long.

The present records serve to extend appreciably the range of this species, since the form has been reported previously only from

the states of Washington and California (Chamberlin, 1929) and Utah (Hoff and Clawson, 1952). *Lechytia pacifica* probably has an extensive geographical range throughout the southern and western portions of the Rocky Mountain area.

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